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| EXAMINER |
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MORILLO, JANEL COMBS

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| ART UNIT | PAPER NUMBER |
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1742

DATE MAILED: 12/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/642,518

Applicant(s)

BENEDICTUS ET AL.

Examiner

Janelle Combs-Morillo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-34, 38-50 and 52-55 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-34, 38-50 and 52-55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 23-34, 38-50, 52, 53 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear the meaning of “essentially free of Mn” (the specification mentions a multiplicity of maximums including <0.1, <0.3, as well as 0% Mn). Claims dependent on independent claim 23 are likewise rejected under this statute. Appropriate correction is required.

Applicant cited 218 USPQ 289 *In re Marosi* as providing evidence that the instant claims which recite “essentially free of Mn” means Mn is present as “unavoidable impurity”. However, *In re Marosi* mentions that “essentially free” is definite when applicant has provided general guidelines and examples to enable one of ordinary skill in the art to draw a line between unavoidable impurities and essential ingredients, which is unclear in the instant case because the specification mentions a multiplicity of maximums (and therefore no clear definition of essentially free) said maximums including <0.1, <0.3, as well as 0% Mn. It is unclear if “essentially free” is held to a maximum of Mn including 0.3, 0.2, 0.1, 0.05, etc...

3. Claim 55 does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

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Claim 55 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 23-30, 32-34, 38-50, 52, 53, 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rioja et al (US 6,562,154 B1) optionally in view of Dif et al (US 2004/0079455A1).

Rioja teaches a process of casting, working, and heat treating an Al-Cu alloy comprising (in weight%): 3.4-4.0% Cu, 1.0-1.6% Mg, 0-0.4% Mn 0.09-0.12% Zr, up to 1% Si, up to 1% Fe (column 5 lines 5-7, 16-18, Rioja at claim 6). Rioja also teaches an Al-Cu alloy with 3.5-4.5% Cu, 0.6-1.6% Mg, 0.3-0.7% Mn, 0.08-0.13% Zr, up to 1% Si, up to 1% Fe (column 5 lines 5-7, column 4 lines 60-64). In particular, Rioja teaches up to 1% Si can be added in order to provide strengthening precipitates after heat treatment (column 5 lines 18-19). Rioja teaches that Zr forms dispersoids (column 5 lines 25, 32) with help control grain growth and recrystallization. Rioja teaches said process comprises: DC casting, homogenizing, preheating, hot rolling,

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reheating, finish hot rolling, optional cold rolling, optional intermediate anneals during hot or cold rolling, annealing, solution heat treating, quenching, stretching <6% (column 6 lines 58-60), cold rolling, and naturally aging (Examples, column 6 lines 9-14) to a T3 type temper (col. 7 line 12).

Rioja does not teach the elevated range of Cu combined with a amount of very low Mn amount, such as <0.1% (however, it is unclear the amount of Mn that the instant claims are drawn to, see above). Dif teaches that Al-Cu-Mg alloys that are substantially Mn-free and contain 3.6-4.5% Cu (see [0007]) exhibits a good compromise between strength and toughness (see [0008]). It would have been obvious to one of ordinary skill in the art to have an Al-Cu alloy with elevated Cu and low Mn, as taught by Dif, for the process of casting, heat treating, and working an aluminum alloy taught by Rioja because Dif teaches said added Cu achieves excellent mechanical properties (see page 1 of specification) and that low manganese is beneficial for a good compromise between strength and toughness (Dif at [0008]). Because it is unclear the amount of Mn the instant claims are drawn to, it is held that Rioja alone or alternatively combined with Dif has created a prima facie case of obviousness of the presently claimed invention.

Overlapping ranges have been held to be a prima facie case of obviousness, see MPEP § 2144.05. It would have been obvious to one of ordinary skill in the art to select any portion of the range, including the claimed range, from the broader range disclosed in the prior art, because the prior art finds that said composition in the entire disclosed range has a suitable utility.

Concerning claims 24-29, as stated above, Rioja teaches a process substantially as presently claimed. Concerning claims 26 and 28, which mention naturally aging for a certain

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period of days, the examiner submits that aging is a result effective variable, wherein the expected result is degree of precipitation hardening. Changes in temperature, concentrations, or other process conditions of an old process does not impart patentability unless the recited ranges are critical, i.e. they produce a new and unexpected result. However, said parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977), See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Concerning claim 30, Rioja teaches said alloy is in the form of a rolled product typically 0.01-0.25 in thick (0.25-8.89mm, column 4 lines 9-10).

Concerning claims 32 and 33, Rioja teaches said alloy is used for aircraft fuselages (abstract, column 2 lines 18-19).

Concerning claim 34, it would have been obvious to one of ordinary skill in the art to form the alloy taught by Rioja into a lower-wing member, because Rioja teaches said alloy is suitable for aircraft structural parts such as fuselage components.

Concerning claims 46-49, which mention various properties such as TS, YS, fatigue crack growth resistance, because Rioja teaches a process of casting, working, and heat treating substantially as presently claimed, wherein said process is performed on an alloy within the presently claimed alloying ranges, then substantially the same properties are expected to be inherently present. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. *In re*

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Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). “When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.” *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Because Rioja teaches substantially similar processing steps performed on an alloy that falls within the instant alloying ranges, it is held that the same properties would be expected to be present.

6. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rioja or Cassada as applied to claim 23 above, and further in view of “Metals Handbook Desk Edition” p 445-446.

Concerning claim 31, neither Rioja nor Cassada mention rolling said alloy is formed into thick sheets. However, “Metals Handbook Desk Edition”, teaches that similar 2024 type Al-Cu alloys can be formed into sheet 0.15-6.3 mm thick or plate 6.3-200mm thick (“Metals Handbook Desk Edition” p 445, 3rd column) depending on the application (see p 446). It would have been obvious to one of ordinary skill in the art to form the alloy taught by Rioja or Cassada into thick sections, within the presently claimed 25-50mm, because “Metals Handbook Desk Edition” teaches that substantially similar 2024 alloys are formed into thick plate used for aircraft structures where high strength is required (“Metals Handbook Desk Edition” p 445).

7. Claims 23, 24, 26-30, 32-34, 38-41, 45-50, 52-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cassada III (US 5,593,516).

Cassada teaches an aluminum based alloy sheet (typically 0.400 in thick, col. 7 line 16) with 2.5-5.5% Cu, 0.1-2.3% Mg, up to 0.15% Fe, up to 0.10% Si, up to 0.20% Zr, up to 0.05% Ti (Cassada at claims 1, 2, 6), which overlaps the presently claimed alloying ranges of Cu, Mg,

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Si, Fe, Mn, and Zr (cl. 23, 38-41, 45, 50, 52-55). Cassada teaches that Zr replaces Mn as a grain growth and recrystallization inhibitor in said composition (column 5 lines 57-61), because Mn lowers the fracture toughness.

Cassada teaches a process of forming said aluminum alloy by: ingot casting (DC casting, column 4 line 40), homogenizing, preheating, hot rolling with optional reheating as necessary, solution heat treating, quenching, stretching, artificially aging (column 7 lines 6-27). Though Cassada teaches a peak strength T6 type temper, it would have been obvious to one of ordinary skill in the art to apply a T3 or T351 naturally aging temper in order to obtain moderate strength properties while eliminating the need for an artificial aging cycle.

Because Cassada teaches a process of working and heat treating an Al-Cu-Mg alloy that overlaps or touches the boundary of the presently claimed alloying ranges, then it is held that Cassada has created a prima facie case of obviousness of the presently claimed invention.

Concerning claims 24, 26-29, as stated above, Cassada teaches a process of working and heat treating substantially as presently claimed.

Concerning the thickness limitations of claim 30, Cassada teaches overlapping thickness of 10 mm (see examples).

Concerning claims 32-34, Cassada teaches said alloy is used for aircraft wing skins or body sheet (column 8 lines 28-29).

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Concerning claims 46-49, which mention various properties such as TS, YS, fatigue crack growth rate, because Cassada teaches an alloy within the presently claimed alloying ranges processed substantially as presently claimed, then substantially the same properties are expected to be present.

8. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cassada in view of Rioja et al (US 6,562,154 B1).

Cassada does not teach cold rolling or interannealing. However, Rioja teaches cold rolling is effective for further reducing Al-Cu alloys into thin sheets, wherein said cold rolling can include intermediate anneals during said cold rolling (column 6 lines 58-60). It would have been obvious to one of ordinary skill in the art to perform steps of further reduction by cold rolling and interannealing for the process of forming an Al-Cu alloy sheet or plate taught by Cassada, because Rioja teaches that said cold rolling is effective for further reducing Al-Cu alloys into thin sheets.

Response to Amendment

9. In the response filed on September 22, 2006 applicant amended claim 23, 38, 39, and added new claims 54 and 55. The examiner agrees that no new matter has been added.

10. See above for treatment of amended limitation “essentially free of Mn”.

11. Applicant’s argument that the present invention is allowable over the prior art of record because Rioja combined with Dif do not teach the instant alloy processed substantially as set forth in amended claim 23 has not been found persuasive. It is unclear if “essentially free” is distinguished over Rioja alloy I (see p 8 of response, see discussion of Rioja above), that is, a

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minimum of 0.3% Mn. Further, the references are combinable because Dif teaches Al-Cu-Mg alloys that are substantially Mn-free and contain 3.6-4.5% Cu (see [0007]) exhibits a good compromise between strength and toughness (see [0008]). Additionally, the prior art of Cassada teaches that Zr replaces Mn as a grain growth and recrystallization inhibitor in said composition (column 5 lines 57-61), because Mn lowers the fracture toughness.

12. Furthermore, as stated previously, applicant has set forth unexpected results with regard to 2024 and 2524 alloys in the instant specification. To be commensurate in scope with said unexpected results the examiner suggests a) amending the claims or b) supplying supplemental data. Concerning a), the examiner suggests amending Mg, Si, and Mn ranges or maximums of the independent claims to be commensurate in scope with the showing of unexpected behavior. The nonobviousness of a broader claimed range can be supported by evidence based on unexpected results from testing a narrower range if one of ordinary skill in the art would be able to determine a trend in the exemplified data which would allow the artisan to reasonably extend the probative value thereof. *In re Kollman*, 595 F.2d 48, 201 USPQ 193 (CCPA 1979). However in the instant case, it is unclear the trend occurs over the currently claimed range.

Alternatively, concerning b), the examiner suggests applicant provide a sufficient number of tests fully commensurate in scope with the claimed ranges, said tests both inside and outside the claimed range to show the criticality of the claimed range. *In re Hill*, 284 F.2d 955, 128 USPQ 197 (CCPA 1960).

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janelle Combs-Morillo whose telephone number is (571) 272-1240. The examiner can normally be reached on 8:30 am- 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER

JCM

December 7, 2006